What is claimed is:

1. A thermal mass flow controller housing, comprising:

a) a first chamber for enclosing a bypass tube, the first chamber including a wall for mounting a second chamber;

b) a second chamber for enclosing a sensor tube, the second chamber including a wall for mounting to said wall of the first chamber, both walls including input and output apertures formed therethrough to provide access to the bypass tube for the sensor tube;

c) a thermal ground formed between the first and second chambers, the thermal ground comprising substantially the entire thermal conductive path between the first and second chambers; and

d) a conductive thermal element in conductive thermal contact conductive with at least a portion of the second chamber and formed to conduct thermal energy from within the second chamber away from the first chamber.

2. A thermal mass flow controller housing according to claim 1, wherein the thermal ground is located between the input and output apertures.

3. A thermal mass flow controller-housing according to claim 1, wherein the conductive thermal element substantially surrounds the second chamber.

4. A thermal mass flow controller housing according to claim 2, wherein the thermal ground is located substantially midway between the input and output apertures.

5. A thermal mass flow controller housing according to claim 4, wherein the thermal ground provides a rectangular cross-section of conductive thermal contact between the first and second chambers.

6. A thermal mass flow controller housing according to claim 3, wherein the conductive thermal element includes one or more exterior surfaces that face substantially toward the first chamber and one or more exterior surfaces that face substantially away from the first chamber and one or more of those surfaces that face substantially away from the first chamber includes structure to accelerate the flow of thermal energy away from the first chamber.

7. A thermal mass flow controller housing according to claim 4, wherein the thermal ground provides a circular cross-section of conductive thermal contact between the first and second chambers.

8. A thermal mass flow controller housing according to claim 1 further comprising: an enclosure which substantially envelops the first and second chambers, the thermally conductive element configured to make conductive thermal contact with said enclosure.

9. A thermal mass flow controller housing according to claim 4, wherein the thermally conductive element is composed of a high thermal conductivity material.

10. A thermal mass flow controller comprising:

a) a control valve assembly for controlling the rate of fluid flow through a conduit, the control valve assembly in thermally conductive communication with a thermal mass flow controller housing;

b) a sensor assembly for sensing the rate of flow of the fluid through the conduit as a function of the difference in temperature between first and second regions of the conduit and for generating a control signal as a function of said rate of fluid flow, the sensor assembly in thermally conductive communication with said mass flow controller housing;

c) a thermal ground formed between the valve assembly and the sensor assembly, the thermal ground comprising substantially the entire thermal conductive path between the sensor assembly and the valve assembly; and

d) a conductive thermal element in conductive thermal contact with at least a portion of the second chamber and formed to conduct thermal energy from within the second chamber away from the first chamber.

11. A thermal mass flow controller according to claim 10, wherein the thermal sensor includes input and output apertures for said conduit and said thermal ground is located between said input and output apertures.

12. A thermal mass flow controller according to claim 11, wherein the thermal ground is located substantially midway between the input and output apertures.

13. A thermal mass flow controller according to claim 12, wherein the thermal ground provides a rectangular cross-section of conductive thermal contact between said sensor assembly and said mass flow controller housing.

14. A thermal mass flow controller according to claim 13 wherein the major axis of the thermal ground is perpendicular to an axis defined by the operational section of the mass flow sensor.

15. A thermal mass flow controller according to claim 14 wherein the axis defined by the operational section of the mass flow sensor is not defined by a line between said input and output apertures.

16. A thermal mass flow controller according to claim 10, wherein the conductive thermal element substantially surrounds the second chamber.

17. A thermal mass flow controller according to claim 11, wherein the conductive thermal element includes one or more exterior surfaces that face substantially toward the first chamber and one or more exterior surfaces that face substantially away from the first chamber and one or more of those surfaces that face substantially away from the first chamber includes structure to accelerate the flow of thermal energy away from the first chamber.

18. A thermal mass flow controller according to claim 10 further comprising:
an enclosure that substantially envelops the first and second chambers, the thermally conductive element configured to make conductive thermal contact with said enclosure.

19. A thermal mass flow controller according to claim 11, wherein the thermally conductive element is composed of a high thermal conductivity material.

20. A thermal mass flow controller according to claim 13, wherein the exterior of the second chamber is substantially cylindrical and interior of the thermally conductive element is substantially cylindrical and of a size which promotes conductive thermal contact between, respectively, substantially the entire exterior and interior surfaces.

21. A thermal mass flow controller according to claim 10, wherein the thermally conductive element is integral to the exterior of the second chamber.

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